Together Against Sizewell C

TOGETHER AGAINST SIZEWELL C (TASC) WRITTEN REPRESENTATION

SIZEWELL C PLANNING APPLICATION INQUIRY (IP no. 20026424)

AIR QUALITY IMPLICATIONS OF SIZEWELL C

A paper by TASC committee member Emma Bateman

NB: In this document, references to EDF are references to the Applicant.

NNB: This document is supplementary to TASC's report: Review of the Planning Inspector's Questions on Air Quality by Air Pollution Services.

Executive Summary

1. TASC is of the opinion that EDF has not given sufficient proof of their commitment and expertise in designing and modelling the comprehensive testing and monitoring programmes that are essential to delivering EDF's promises of mitigation, restoration and damage avoidance.

2. This paper outlines current and forthcoming legislation concerned with controlling air pollution, and the difficulties in monitoring air quality and ascertaining the effectiveness of mitigation attempts. It discusses the plans of East Suffolk Council with regard to its Air quality monitoring and its reliance on the data supplied by EDF, examples of which are given.

3. The frustrations of attempting to assess EDF's shifting transport strategy is noted, and the effects of pollution on the environment and health are outlined.

4. Examples are shown of UK and EU rulings in Environmental Case law.

5. The points raised in the paper are mirrored by some of the remarks in the Air pollution overview commissioned from Air Pollution Services submitted by TASC, and these are highlighted.

6. Finally, questions derived from the issues discussed in this paper are raised.

7. TASC believes it is imperative that appropriate scrutiny is made of the assessments submitted by EDF. TASC hope that EDF will be held to a standard that ensures their data must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the plans or the projects proposed on the protected site concerned.

8. We ask the planning inspectorate therefore to thoroughly review the actual data presented by EDF and examine whether their data collection, modelling, methods and conclusions reach the required benchmarks.

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Introduction

Legislative Background

9. The National Planning Policy Framework (NPPF)[1] states that planning permission should be refused if significant harm to biodiversity cannot be avoided, mitigated or, as a last resort, compensated. In terms of air quality, particular attention should be paid to whether a development will materially affect the overall degradation (or improvement) in local air quality, or whether it will introduce new public exposure into an area of existing poor air quality.

10. The UK has legally-binding international and domestic targets to reduce emissions from a broad array of air pollutants. The Clean Air Strategy came into force in 2019 and The National Emission Ceilings Regulations 2018 establishes the "national emissions ceilings" for five of the most damaging air pollutants, namely fine particulate matter (PM2.5), ammonia (NH3), nitrogen oxides (NOx), sulphur dioxide (SO2), and non-methane volatile organic compounds (NMVOCs), and creates the duty to set out measures to meet the 2020 and 2030 emission reduction targets for these five pollutants.

11. The Air Quality Standards Regulations 2010 define legally binding air quality standards and the publication of Air Quality Plans is required to ensure levels are reduced and these standards are met.

12. Unfortunately, the UK has consistently breached obligations under EU Air Quality Rules for both particulates and oxides of nitrogen[2]. Infrastructure is the primary source of total NOX and SO2 emissions, whilst road transport is the primary driver of human exposure to PM10 and PM2.5. Air pollution is known to harm birds, mammals and insects and pollutants have significant effects through their impacts on ecosystem sources and sinks. These include the effects of nitrogen deposition in increasing plant growth, and longer term effects that are in the early stages of investigation.

13. Despite the failure to reach the requirements of current guidelines, and in recognition of the urgent need to further protect the environment, an Environment Bill is currently passing through Parliament, the aim of which is to reinforce the methods of environmental protection. It will require the government to set legally binding environmental targets for England in four priority areas including air quality. The targets set out in the bill will be in addition to existing emission reduction commitments and air quality standards for all currently regulated pollutants, and will be brought forwards by 31 October 2022, coming into force once approved by Parliament.

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1 A guide to the assessment of air quality impacts on designated nature conservation sites www.iaqm.co.uk Version 1.1 May 2020 para 13.3

2 The impact of the environment and climate change on future infrastructure supply and demand (nic.org.uk) page 23

14. The Environment Bill will also aim to set a target for reduction of PM2.5[3] because although the UK currently meets all legally binding limits for PM2.5, it is recognised that it is still one of the most damaging air pollutants to human health.

Difficulties in Monitoring and Ensuring the Accuracy of Results

15. EDF intend to mitigate for the effects of the predicted sources of air pollution. In order to do so, there needs to be a thorough understanding of the intersecting influences on pollution, and careful measurements to ascertain baselines and track changes. Measuring and monitoring air pollution is a complex matter. EDF must be required to show that they have adequate time, resources and competence to carry out the work required.

16. The assessment of interventions is important for many reasons, one of which is the potential to link a particular policy with a known, quantifiable outcome on air quality. The quantification of interventions can be challenging and there is no single, accepted approach that has been widely adopted.

17. Challenges for those designing data collection, monitoring regimes and subsequent interventions include the common situation where interventions rarely occur in isolation from other changes that affect air quality, and the difficulty in detecting and quantifying changes if the interventions are small. Not every intervention is detectable in terms of quantifying changes in pollutant concentrations or health outcomes, even using sophisticated analysis techniques[4].

18. While statistically detecting a change in air quality in response to a single intervention can be difficult, quantitatively attributing change to individual, overlapping interventions in a manner useful to policymakers is extremely challenging: it is difficult to predict the effects of climate change on regional air quality, and whilst temporal variations, surface temperature and soil dryness are keys to understanding the likely severity of future summers, meteorological variation can easily mask or emphasise changes in concentrations resulting from changes in emissions.

19. Very large construction projects may produce significant perturbations to air quality concentrations, and mapping emissions from certain sources such as off-road machinery is particularly problematic because of the transient nature of the activities. The activity may occur in a certain area for a certain period of time, and then move on. However, the effects of localised poor air quality even if only transitory, are real and substantial.

20. The concept of uncertainty in emission inventories is important, but is by no means simple. There are different types of uncertainty – the uncertainty in the trend with time and the absolute uncertainty of an emissions estimate. There are also several different statistical approaches that can be used for assessing levels of uncertainty.

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[3] 19 August 2020: Environment Bill - environmental targets - GOV.UK (www.gov.uk)

[4] https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2006240803_Assessing_the_effectiveness_of_Interventions_on_AQ.pdf

However, these do not necessarily account for all influencing factors, such as detailed speciation.

21. The levels of certainty associated with datasets developed for different purposes vary greatly, and the user needs to have an appreciation of how the data have been tailored to ensure that they are fit for purpose. One of the most important issues associated with emission inventories is that the users of the data do not always have an appreciation of what the data are or are not suited for. Unfortunately, the many practical and methodological challenges related to the robust quantification of data means it is common for analyses to rely on existing data rather than specifically collected data, which might not be optimal for quantification purposes[5].

22. Sources from which calculations of emissions are particularly uncertain are: VOC emissions from solvent use and from biogenic sources; NOx, SO2 and PM emissions from domestic combustion, off-road machinery and shipping, and activities such as construction, agriculture and other fugitive releases of dust.

Difficulties in measuring PM2.5

23. The science underpinning the knowledge of PM2.5 is rapidly evolving and remains uncertain in many areas. There is a need for rapid translation into the policy arena of the newest results and understanding, and there is a general and important challenge in the development of emission inventories fit for modelling PM2.5 concentrations.[6]

24. Long-term, self-consistent records are essential for the fulfilment of policy requirements and to understand the impact of policy actions on the concentration of any given pollutant. At this time, it is not clear that measurements of PM2.5 are sufficient to meet this requirement and whether a robust measure of PM2.5 currently exists, is uncertain. A major difficulty for assessment of compliance is that PM2.5 measurement methods are still evolving and the reference method is currently being revised[7].

25. Consequently, measurements made in 2020 may not be adequate, which sheds serious doubt on the evidence that the EU exposure reduction target is being met for PM2.5. These measurement difficulties, and also the interpretation of PM2.5 data, provide significant challenges for the modelling community. The measurement uncertainty is currently at the limit of being meaningful for interpretation by models and vice versa.

26. The estimated uncertainty in total UK PM2.5 emissions is estimated to be between minus 20% and plus 30%. However, this estimate of uncertainty at the UK level, when compared with inventory uncertainties for other pollutants, masks the much higher uncertainties in emissions from individual sectors and in emissions at specific locations and times. These are difficult to quantify,

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5 https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2006240803_Assessing_the_effectiveness_of_Interventions_on_AQ.pdf

6 212141150_AQEG_Fine_Particulate_Matter_in_the_UK.pdf (defra.gov.uk)

7 1212141150_AQEG_Fine_Particulate_Matter_in_the_UK.pdf (defra.gov.uk)

27. With regards to mapping PM2.5 on a national scale it is important to define the rural background contribution to PM2.5 across the UK because currently there are limited measurements of PM2.5 composition in different types of location and in different areas of the UK.

East Suffolk Councils Reliance on EDF's Data Collection

28. East Suffolk Council (ESC) have a duty to carry out suitable monitoring to enable them to identify if pollution levels are higher than expected. With regards to Sizewell C, ESC intend to establish a joint monitoring programme with EDF, although this is yet to be agreed. ESC are required to check and confirm that the assessments are complete and accurate, and work with EDF on the controls and plans needed if planning permission is granted. The council is still working on this at present.

29. The main focuses of the council with regards to monitoring are the pollutants nitrogen dioxide (NO2), PM10 and PM2.5 and dust. PM10 and PM2.5 are not currently measured by East Suffolk Council and, as far as TASC are aware, they have no firm plans to currently carry out such monitoring.

30. In respect of the Air Quality monitoring that East Suffolk Council undertakes, TASC are informed that it is important to remember that the starting point is to understand that air quality monitoring is not the only tool available for managing the environmental impact of development. In fact, air quality monitoring is quite an ineffective method, and is only used as a kind of backstop, to check that everything is working as expected.

31. Defra has tasked all local authorities with trying to reduce PM2.5 emissions locally. However local councils may conclude that whilst measuring levels of PM2.5 may well reveal useful information, there would be no real prospect of being able to identify the source precisely or to do anything with the information, so it may not be a cost effective exercise.

32. As PM10 and PM2.5 are not currently measured by East Suffolk Council, it seems that they are relying on EDF's figures. A system that relies heavily on EDF's reporting would not inspire confidence in local members of the public.

33. With regard to Sizewell C, it is important that an agreement is reached between EDF and the local authority as to the proposed assessment methodology, and that ESC undertake to thoroughly test and examine EDF's figure-modelling and assumptions. In addition, the local environment agency, AONB experts and those working for NGO's need to have access to adequate funding to enable them to thoroughly examine and assess EDF's conclusions, particularly in the light of the many changes and revisions that EDF continue to make to the plans. Given the fact that fundraising by charities has been curtailed during the covid pandemic and that NGO's have faced budget cuts, it is crucial to ascertain whether or not councils, charities and NGO's have had adequate time and resources available to verify EDF's own findings independently.

The Quality of EDF's Data Collection

34. Having outlined some of the difficulties and problems with gathering data, here are 2 examples of the data collection EDF has undertaken recently[8].

Table 1.2: Monthly Averaged Seasonal Dust Deposition Rates (mg/m²/day)

Measurement Site ID	Spring (14/02/17 to 08/05/17)	Summer (09/05/17 to 04/09/17)	Autumn (05/09/17 to 26/09/17 and 28/09/16 to 21/11/16)	Winter (22/11/16 to 13/02/17)
Measurement site 1	137	-a	40	33
Measurement site 2	17	-a	26	27
Measurement site 3	18b	-a	27	30b
Measurement site 4	39	112b	28	14b
Measurement site 5	8b	29	23b	13
Measurement site 6	29b	67b	37b	12b
Measurement site 7	16	40	19	11
Measurement site 8	21b	42	25b	11b

a Sample discontinued

b Foam Particle Trap missing or found on floor for one or more sampling period– result not included in total deposition rate

c Discontinued site data excluded

35. The sampling that is reported in the plans indicate that there have been frequent problems with collecting accurate data. In this example, some of the samples were discontinued and many of them could not be included because the particle trap was blown off the equipment. In the following table it appears that 13 out of 29 samples that were taken are invalid.

Table 1.3: Dust Deposition Rates (mg/m²/day)

Measurement Site ID	28/09/16 to 25/10/16	25/10/16 to 22/11/16	22/11/16 to 20/12/16	20/12/16 to 17/01/17	17/01/17 to 14/02/17	14/02/17 to 14/03/17	14/03/17 to 10/04/17	10/04/17 to 09/05/17	09/05/17 to 06/06/17	06/06/17 to 04/07/17	04/07/17 to 01/08/17	01/08/17 to 05/09/17	05/09/17 to 26/09/17
Measurement site 1	31	49	38	49	13	137	-b	-b	-b	-b	-b	-b	-b
Measurement site 2	28	23	6	66	9	17	-b	-b	-b	-b	-b	-b	-b
Measurement site 3	27	a	46a, c	34	10	18c	-b	-b	-b	-b	-b	-b	-b
Measurement site 4	29	27	11c	19	12	39	47	32	327	22c	68	32	29
Measurement site 5	34	23	18	9	13	3c	9	13	42	20	36	18	12c
Measurement site 6	19	69	16	16	5c	22	30	35	93	30c	57	87	24c
Measurement site 7	22	10	5	11	17	14	19	16	55	30	44	32	25
Measurement site 8	34	17	9	12	13c	10	31	21	49	30	57	32	24c

[a] *Sample exposed for two months due to no access on 22/11/16*

[b] *Sample Discontinued*

[c] *Foam Particle Trap missing or found on floor – result not included in total deposition rate*

36. A similar problem can be seen in this table where samples were discontinued, or invalid due to the missing particle trap.

37. EDF have previously shown lapses in attention to detail with regard to important measurements. In a Geo-environmental Report for Sizewell C, the incorrect units are used for measurements of Boron[9] which is given in concentrations of µg/l even though the UK standards are mg/l meaning EDF's figures are out by a factor of 1000.

8 Volume 2 Appendix 12E Baseline Monitoring Report

9 EN010012 Volume 2 Main Development Site Chapter 18 Geology and Land Quality Appendix 18A Phase 2 Geo-environmental Interpretative Report Part 1 of 11 page 43

38. They quote the Environmental Quality Standards (EQS) as 7 mg/l[10]. This is the EQS for saltwater not freshwater (2mg/l) – it is not clear which value was used to calculate the exceedances. The high number of exceedances and maximum value reported for boron is a matter of concern if correct, i.e. not just a basic mistake in units.

39. The reports of the assessments carried out by EDF show that a large portion of the data was generated using modelling. There appear to be fewer studies that include robust measured data, and EDF indicate in several places that the results and conclusions are indicative only.

40. It is not clear whether EDF have included figures for possible delays and overruns, and if so, what margin they have used. Overruns are not only possible, they are probable with this project.

41. The language in many of the documents from EDF is vague. References to reviews, and inspections suggest they will be 'regular' with no specification of how regular. For example, the specific level of mitigation required during construction would be 'reviewed regularly' as part of the Dust Management Plan[11]. The Code of Construction Practice uses similarly imprecise terms. The levels estimated for pollution and emissions rely on employing the correct procedures at all times in the code of construction plan, however the monitoring sampling and testing commitments in the plan do not appear in detail. Terms such as ‘regular’ or ‘consistent monitoring’ give no indication as to how often testing will be carried out to ensure the predicted outcomes are in line with reality.

42. Examples of the poor quality of EDF's data gathering were outlined earlier and the following are extracts from EDF's documents discussing data gathering, modelling and monitoring. They illustrate some problems with the methods used by EDF.

43. As was previously outlined, measuring PM 2.5 accurately is difficult. EDF opted in some circumstances to derive the levels of PM2.5 from figures for PM 10 instead.

44. *“IAQM methodology does not specifically include the effects of PM2.5 from construction and demolition activities as these emissions are typically a fraction of the PM10 emission and consequentially a fraction of the predicted impact; the human health effects from particulates are therefore not separately considered for PM10 and PM2.5 in this report.*[12] *”*

45. In the following instance, figures for PM were derived from figures for NOX:.

46. *“Verification of the ADMS-Roads assessment of NO2 transport emissions has been undertaken using the appropriate monitoring locations across the modelled domain. It was identified that there were no appropriate PM10 or PM2.5 monitoring locations*

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10 https://www.esdat net/Environmental%20Standards/UK/Landfill%20Directive%20Appendix%208%20Selected%20Water%20Quality%20Standards.pdf page.76

11 Volume 2 Main Development Site Chapter 12 Air Quality Appendices 12A – 12F

12 6.3 Volume 2 Main Development Site Chapter 12 Air Quality Appendices 12A – 12F 1.3.9

against which to verify the model, so the factor calculated for NO2 has also been applied to PM concentrations."[13]

47. Here, the data is only indicative and the plan is at the design stage – TASC believe it is unacceptable that matters are still in design when assessments of air conditions rely on them.

48. *"The data within AP42 is based on measurement studies at one or more sites and by its nature can only be regarded as indicative; furthermore the assumptions made regarding the scale of activities, study area and construction programme can only be considered indicative at this design stage; therefore the conclusions drawn from the assessment are based on the likely scale of impacts for comparison with threshold levels, rather than determining specific value.*[14]*"*

49. *"EDF used the Defra grid maps of background pollutant concentrations to complete some of its air quality assessments. This is within the guidelines where local background monitoring is unavailable or inappropriate for use. However, it should be noted that the level of uncertainty associated with these modelled estimates is relatively high. Methodologies designed to do the job well for national scale inventories can break down if applied at a much more local level.*[15]*"*

EDF's Transport Strategy

50. EDF appear to be confident that their transport and construction plans for Sizewell C will have little or no impact on air quality, for example they state that:

"Overall, the impact of transport emissions in all modelled scenarios during construction would have a negligible effect at most receptor locations, with only a limited number of receptors experiencing a 'minor' or 'moderate' beneficial effect. The air quality effects for the study area as a whole resulting from traffic associated with the construction of the proposed development are predicted to be **not significant** for all sensitive receptors within the study area."[16]

51. It is difficult to track exactly how they come to this conclusion because the transport plans are vague and the transport strategy has been changed since stage 4 which was supposed to be the last public consultation. No widespread consultation has taken place since then and it appears that the plans of moving bulk materials by rail are aspirational rather than definitive.

52. EDF endeavour to move: 38% of construction materials to the main development site by rail, or 39% by rail and sea. This is 9% more than that possible under the road led strategy[17]. It is suggested that at some sites EDF may attempt to use electric buses and employ consistent air quality monitoring, however as is set out in the TASC WR paper, 'Transport Implication Of Sizewell C'**,** TASC do not believe that Sizewell C can be constructed within the time currently predicted and nor can the volume of material be safely delivered to the site with the proposed transport strategy. We are

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13 SZC_Bk6_ES_V2_Ch12_Air-Quality.pdf 1.2.36

14 6.3 Volume 2 Main Development Site Chapter 12 Air Quality Appendices 12A – 12F

15 1.2.63 SZC_Bk6_ES_V2_Ch12_Air-Quality.pdf

16 6.3 Revision: 1.0 Volume 2 Main Development Site Chapter 12 Air Quality 12.6.31

17 Consultation Report Annex E Stage 3 Issues Tables 5.1

concerned there is nothing certain about the transport strategy, and there are no firm commitments or consequences if EDF do not go through with the proposals for rail and sea deliveries, so the impact from the suggested mitigation on improvements on air quality should not be assumed.

53. With respect to road traffic emissions, a key future factor is that as reductions in exhaust emissions of PM occur as a consequence of European regulations, non-exhaust components of traffic emissions will become much more important, emphasising the need to introduce measures to control their sources. Emissions from tyre, brake wear, road abrasion and the resuspension of road dust are not well understood, yet current inventory projections predict that if they continue to be uncontrolled they will be responsible for over 70% of total traffic emissions of PM2.5 by 2020[18]. However, there are some notable outstanding uncertainties in the prediction of future non-exhaust emissions effects. This includes the balance of increased vehicle weight (increasing tyre and road wear) traded-off against the benefits of emerging vehicle PM reduction technologies.

54. There is some uncertainty in inventories of road transport emissions for NOx, with evidence to suggest that "real world" emissions of NOx from Euro III-IV diesel vehicles are higher than previously thought and have not been declining as anticipated. While future road transport emissions of NOx are expected to decrease, the rate of reduction may, therefore, not be as fast as current inventory projections indicate.[19]

55. Researchers have stated that the extent of the influence of roads on the environment has been "somewhat overlooked and underestimated[20]"

Effect of Emissions on the Environment

56. The indirect effects of PM on ecosystems can be assessed by the impact on soil processes, and therefore on ecosystems, expressed as a "critical load". A critical load is an estimate of an exposure to pollutants below which significant harmful effects on specified elements of the environment do not occur according to present knowledge, and is the main criterion used in the UK to assess the risk of ecosystem impacts. For terrestrial habitats, 54% of natural ecosystem area in the UK is currently estimated to exceed critical loads for acidity. Critical loads for effects of nitrogen deposition on sensitive habitats are calculated to be exceeded for 58% of their area in the UK.[21]

57. Emissions of some airborne pollutants are known to damage the health of ecosystems in subtle and long term ways. Much more is now known about the effects of excess acidity and nutrient nitrogen on plants, which have been taking place over a long period of time. Many sensitive areas of the UK are still adversely affected and are in an unfavourable condition, despite the reduction in national emissions of SO2 and NO.

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[18] 1212141150_AQEG_Fine_Particulate_Matter_in_the_UK.pdf (defra.gov.uk)

[19] 1212141150_AQEG_Fine_Particulate_Matter_in_the_UK.pdf (defra.gov.uk)

[20] https://www.theguardian.com/environment/2016/dec/15/new-map-reveals-shattering-effect-of-roads-on-nature

[21] 1508060906_DEF-PB14106_Linking_Emissions_Inventories_And_Ambient_Measurements_Final.pdf (defra.gov.uk)

58. Climate effects such as hot summers like that of 2003 can lead to phenomena like the substantial photochemical smog episode in Europe. Such effects are likely to become 'typical' by the 2040s, leading to a higher frequency of summer pollution episodes.[22]

59. NH3 emissions contribute to eutrophication of freshwaters and marine ecosystems due to nitrogen deposition on the landscape. Nitrogen deposition has been estimated to be in excess of critical loads for eutrophication over 63% of sensitive habitats of the UK. The main effect of excessive nitrogen deposition is a reduction in plant biodiversity, which has been demonstrated at a range of sites throughout the UK. Reductions in emissions of NH3 are therefore considered one of the most effective measures to reduce effects on biodiversity.[23]

60. Emission inventories for NH3 are highly uncertain due to the complexity and very large range of sources and agricultural practices that give rise to NH3 emissions. Overall uncertainty in total NH3 emissions in the UK has been estimated at ± 20%.[24]

61. 69% of UK Special Areas of Conservation (SACs) have been estimated to have NH3 concentrations larger than critical levels, with the figure for England being 97%, and recent updates with differing methodology have shown little change over time. The exceedances of critical loads for nitrogen (eutrophication) are now the main focus of air pollution impacts on the natural environment.[25]

Effect of Emissions on Health

62. Planning policies state that the effects of pollution on health and the sensitivity of the area and the development should be taken into account in Planning decisions.

63. PM2.5 is an important issue in the UK. It is currently recognised that exposure to particulate matter can give rise to significant health effects and to date there is no evidence of a safe level of exposure. The WHO Air Quality Guidelines recommend a considerably lower level for annual mean PM2.5 than the legal limit in the UK and across Europe. Further, there is no current consensus on the relative contributions of different chemical components of PM to the overall adverse health effects of exposure. Therefore PM2.5 remains a priority issue for Defra. The current acceptable threshold for PM 2.5 is due for review by central government, and it is quite possible this threshold will be revised downwards.

64. PM2.5 can penetrate deep into the lungs and get into the bloodstream and has both short term and long-term impacts. Short-term exposure to elevated levels is known to exacerbate the impact of pre-existing respiratory and cardiovascular health conditions, with elderly people and children the most vulnerable groups, whilst long-term exposure is linked to a number of health impacts including respiratory and cardiovascular disease, cancer and dementia.

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[22] 1508060906_DEFPB14106_Linking_Emissions_Inventories_And_Ambient_Measurements_Final.pdf (defra.gov.uk)

[23] https://uk-air.defra.gov.uk/assets/documents/reports/aqeg/2800829_Agricultural_emissions_vfinal2.pdf

[24] https://uk-air.defra.gov.uk/assets/documents/reports/aqeg/2800829_Agricultural_emissions_vfinal2.pdf

[25] https://uk-air.defra.gov.uk/assets/documents/reports/aqeg/2800829_Agricultural_emissions_vfinal2.pdf

65. NH3 emissions are also indirectly responsible for effects on human health, increasing mortality and morbidity throughout the UK. Nitrogen dioxide can play an adverse role in exacerbating asthma, bronchial symptoms (even in healthy individuals), lung inflammation and reduced lung function.

Application of EU and UK Legislation in Environmental Cases

66. As climate change brings increasing unpredictability, and the value and fragility of the environment and biodiversity are recognised, developers are being challenged through the courts to prove that the destruction to the environment and increase in air pollution is worth whatever gains their plans profess to bring.

67. In a case in 2018 in the Netherlands concerning Air Quality, the court concluded that an appropriate assessment may not take into account the existence of conservation measures, if the expected benefits of those measures are not certain at the time of that assessment.[26]

68. The judgement states that according to previous case law, "…it is only when it is sufficiently certain that a measure will make an effective contribution to avoiding harm to the integrity of the site concerned, by guaranteeing beyond all reasonable doubt that the plan or project at issue will not adversely affect the integrity of that site, that such a measure may be taken into consideration in the 'appropriate assessment' within the meaning of Article 6(3) of the Habitats Directive".

69. In 2016, the European Commission challenged a 2008 decision by the Federal Republic of Germany to authorise the construction of a coal-fired power station at Moorburg, near Hamburg[27]. The Court ruled that the impact assessment did not contain sufficient definitive data regarding the effectiveness of the proposed mitigation measure. This case also concerned the failure of the impact assessment to take account of the cumulative impacts of all other projects and plans which, in-combination with the project or plan for which an authorisation is sought, are likely to have a significant effect on a protected site even where those projects/plans precede the date of transposition of the directive.

70. In the case of Wealden District Council v Secretary of State for Communities and Local Government, the principal issue was whether Lewes District Council and South Downs National Park Authority had acted unlawfully in concluding, on advice from Natural England, that the JCS would not be likely to have a significant effect on the Ashdown Forest Special Area of Conservation (SAC).

71. The judge found that, at least in principle, in-combination effects are potentially relevant at the initial "scoping" stage as well as the subsequent stage requiring further assessment. It was also concluded that advice from Natural England on the approach to be taken to the HRA was "plainly erroneous":[28]

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[26] A guide to the assessment of air quality impacts on designated nature conservation sites www.iaqm.co.uk Version 1.1 May 2020

[27] A guide to the assessment of air quality impacts on designated nature conservation sites www.iaqm.co.uk Version 1.1 May 2020

[28] A guide to the assessment of air quality impacts on designated nature conservation sites www.iaqm.co.uk Version 1.1 May 2020

Questions Raised From Issues Discussed

72. TASC has set out evidence demonstrating why our concerns over EDF's measurements and modelling of sensitive data are valid, and we draw the attention of the examining authority to remarks and points raised in the air pollution overview commissioned from Air Pollution Services that we have submitted. We trust that the examining Authority will take these into consideration when assessing the quality of EDF's ongoing data collection, analysis, modelling and monitoring.

73. ***"2.6: The 'custom and practice' dust deposition assessment criteria used (200 mg/m2/day and 260 mg/m2/day) was developed many decades ago and it is unclear as to whether they remain appropriate today[29]."***

74. ***"2.6: It is likely that the removal of the foam inserts in some instances, as reported in the ES, will have affected the collection efficiency. The 'custom and practice' criteria have never been adopted as statutory levels[30]".***

75. ***"2.8: It is unclear from the Application information reviewed whether continuous monitoring of airborne particulate matter (PM) will be undertaken.[31]"***

76. ***"2.8: Ideally the alert levels would be site-specific derived from baseline monitoring of airborne particulate matter (PM) (PM10 and/or PM2.5). This baseline PM monitoring does not appear to have been undertaken"[32].***

77. ***"2.9: Insufficient information on the monitoring of PM is provided in the outline Dust Management Plan (Volume 2, Chapter 13 Air Quality, Appendix 12A.1 Proposed Mitigation Measures)[33]".***

78. ***"2.9: The report also references the use of inappropriate methods to assess the impact of exhaust emissions"***

79. ***"3.10: An Environmental Impact Assessment (EIA) should assess the potential health impacts, not simply compliance with a national target, as has been done in the ES. Given the recent Coroner's conclusions, that air pollution was a significant contributory factor in the death of a 9 year old girl, APS believe that the health-based WHO guideline (10 µg/m3) should also be used as an assessment criteria.[34]"***

80. In addition we feel it is reasonable to ensure that sufficient attention is paid to the questions raised during the compiling of this paper.

81. *If ESC is not measuring PM10s and PM2.5s levels, when is baseline modelling, which should take place prior to construction, going to be done, and who will verify independently that EDF's figures are correct. How much of the data relies on modelling as opposed to collected readings?*

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[29] 2.6 Sizewell C Review of Examination Authority's QuestionsC.Holman S1018[23391].pdf
[30] 2.7 Sizewell C Review of Examination Authority's QuestionsC.Holman S1018[23391].pdf
[31] 2.8 Sizewell C Review of Examination Authority's QuestionsC.Holman S1018[23391].pdf
[32] 2.8 Sizewell C Review of Examination Authority's QuestionsC.Holman S1018[23391].pdf
[33] 2.9 Sizewell C Review of Examination Authority's QuestionsC.Holman S1018[23391].pdf
[34] 3.10 Sizewell C Review of Examination Authority's QuestionsC.Holman S1018[23391].pdf

82. *The role of East Suffolk Council (ESC) at this stage is firstly to check and confirm that the assessments are complete and accurate, - do they have the funds and the expertise to do this?*

83. *ESC are working on ensuring that all the assumptions about the controls that will be needed are in place. How is that progressing and at what point will it be finalised, and what happens if development has begun prior to the necessary checking of the proposals?*

84. *The monitoring should have started already in order to obtain a minimum 12 month baseline before any construction works start, if as suggested EDF are to begin in 2022. Has it begun?*

85. *Are unusually high recordings discarded as anomalies from the data?*

86. *What criteria accounts for the automatic lower emissions in 2028 than now? How certain are they of the figures?*

87. *EDF say that an adequate water supply will be made available for dust/particulate matter suppression and house-keeping. How much of this will be reliant on potable water from Essex and Suffolk water in times of low rain fall and drought?*

88. *EDF state that 'The use of stationary generators would be avoided where practicable. How is 'Where practicable' quantified – what are the indices and who decides on them?*

89. *EDF state that 'The use of mobile power plant including diesel or petrol powered plant would be avoided where practicable and then limited to temporary functions (less than six months). Is the term of less than 6 months guaranteed even during operation overruns, and does it mean that the whole site will stop running machines after 6 months or that they will stop for a couple of days each after 6 months?*

90. *EDF State that 'Regular site inspections would be carried out to ensure compliance with the Dust Management Plan (DMP)'. How frequent and thorough would these site inspections have to be?*

91. We have set out to demonstrate in this paper that the monitoring and assessment of air pollution causes and levels is complicated and challenging, particularly as legislation of pollution and targets are subject to change over the next few years.

92. TASC are doubtful that EDF have committed sufficient resources, time and thought into addressing the challenges. We are concerned about the reliance of ESC on data presented by EDF. ESC have a role in monitoring the quality of EDF's data collection, and so must be able to independently check and verify the results. NGOs, charities and other respondents should also be able to muster sufficient funds to monitor and assess the effects of air pollution on the environment. We are not convinced that at present that is the case.